IN THE CLAIMS

Please cancel claim 6, amend claims 1, 3-5, 7, 8, 16-18, 23, 26, 27-29, 30, 33, and 37 and add new claims 38-46 as follows:

1. (CURRENTLY AMENDED) An apparatus for receiving a non-coherently layered modulation signal comprising a lower layer signal non-coherently layered with an upper layer signal, comprising:

a tuner for receiving the non-coherently layered modulation signal and producing a non-coherently layered in-phase signal and a non-coherently layered quadrature signal therefrom;

an analog-to-digital converter for digitizing the non-coherently layered in-phase signal and the non-coherently layered quadrature signal; and

a processor for decoding the non-coherently layered in-phase signal and the non-coherently layered quadrature signal to produce ~~one or more discrete~~ the upper layer signal[[s]] and the lower layer signal.

2. (ORIGINAL) The apparatus of Claim 1, wherein the processor comprises a logic circuit.

3. (CURRENTLY AMENDED) The apparatus of Claim 1, further comprising ~~one or more~~ a first decoders[[,]] ~~each~~ for ~~receiving~~ and decoding ~~one of the one or more discrete~~ the upper layer signal[[s]] ~~to be displayed~~, and a second decoder for decoding the lower layer signal.

4. (CURRENTLY AMENDED) The apparatus of Claim 1, wherein decoding by the processor performs frequency acquisition on the non-coherently layered quadrature signal.

5. (CURRENTLY AMENDED) The apparatus of Claim 1, wherein decoding by the processor match filters the non-coherently layered in-phase signal and the non-coherently layered quadrature signal.

6. (CANCELED)

7. (CURRENTLY AMENDED) The apparatus of Claim [[6]] 1, wherein the processor produces an ideal upper layer signal including an ideal in-phase upper layer signal and an ideal quadrature upper layer signal from the decoded upper layer signal and subtracts the ideal in-phase upper layer signal and the ideal quadrature upper layer signal from the layered in-phase signal and the layered quadrature signal, respectively, to produce a lower layer in-phase signal and a lower layer quadrature signal of a lower one of the one or more discrete layer signals.

8. (CURRENTLY AMENDED) The apparatus of Claim 7, wherein the processor demodulates and decodes the lower layer in-phase signal and the lower layer quadrature signal to produce the lower ~~one of the one or more discrete~~ layer signal[[s]].

9. (ORIGINAL) The apparatus of Claim 7, wherein the processor match filters the lower layer in-phase signal and the lower layer quadrature signal.

10. (ORIGINAL) The apparatus of Claim 7, wherein the layered in-phase signal and the layered quadrature signal are delayed to synchronize the subtraction.

11. (ORIGINAL) The apparatus of Claim 10, wherein delaying the layered in-phase signal and the layered quadrature signal are delayed by correlating to the ideal in-phase upper layer signal and the ideal quadrature upper layer signal.

12. (ORIGINAL) The apparatus of Claim 7, wherein producing the ideal upper layer signal comprises signal processing the ideal in-phase upper layer signal and the ideal quadrature upper layer signal.

13. (ORIGINAL) The apparatus of Claim 12, wherein signal processing the ideal in-phase upper layer signal and the ideal quadrature upper layer signal comprises finite impulse response matched filtering the ideal in-phase upper layer signal and the ideal quadrature upper layer signal.

14. (ORIGINAL) The apparatus of Claim 12, wherein signal processing the ideal in-phase upper layer signal and the ideal quadrature upper layer signal comprises applying a signal map to the ideal in-phase upper layer signal and the ideal quadrature upper layer signal, the signal map accounting for transmission distortions of the layered signal.

15. (ORIGINAL) The apparatus of Claim 12, wherein signal processing the ideal in-phase upper layer signal and the ideal quadrature upper layer signal comprises amplitude and phase matching the ideal in-phase upper layer signal and the ideal quadrature upper layer signal with the layered in-phase signal and the layered quadrature signal, respectively.

16. (CURRENTLY AMENDED) A processor for decoding a non-coherently layered modulation signal comprising a lower layer signal non-coherently layered with an upper layer signal into ~~separate signal layers~~ the upper layer signal and the lower layer signal, comprising:

a first demodulator and first decoder for demodulating and decoding [[an]] the upper layer signal from the non-coherently layered modulation signal and providing the demodulated and decoded upper layer signal at a first output;

an encoder for generating an ideal upper layer signal from the decoded upper layer signal;

a signal processor for modifying the ideal upper layer signal to characterize transmission and processing effects;

a subtractor for subtracting the modified ideal upper layer signal from the non-coherently layered modulation signal to produce [[a]] the lower layer signal; and

a second demodulator and second decoder for demodulating and decoding the lower layer signal and providing the decoded lower layer signal at a second output.

17. (CURRENTLY AMENDED) The processor of Claim 16, further comprising a delay function correlated to an output of the signal processor to appropriately delay the non-coherently layered modulation signal to synchronize amplitude and phase matching of the modified ideal upper layer signal and the layered signal.

18. (CURRENTLY AMENDED) The processor of Claim 16, further comprising a delay function correlated to an output of the signal processor to appropriately delay the non-coherently layered modulation signal to synchronize subtraction of the modified ideal upper layer signal and the layered signal.

19. (ORIGINAL) The processor of Claim 16, wherein the signal processor performs finite impulse response matched filtering on the ideal upper layer signal.

20. (ORIGINAL) The processor of Claim 16, wherein the signal processor performs finite impulse response matched filtering on the delayed layered signal.

21. (ORIGINAL) The processor of Claim 16, wherein the signal processor applies a signal map to the ideal upper layer signal.

22. (ORIGINAL) The processor of Claim 16, wherein the signal processor amplitude and phase matches the ideal upper layer signal with the layered signal.

23. (PREVIOUSLY PRESENTED) A method of decoding a non-coherently layered modulation signal comprising a lower layer signal non-coherently layered with an upper layer signal, comprising the steps of:

receiving [[a]] the non-coherently layered modulation signal and producing a non-coherently layered in-phase signal and a non-coherently layered quadrature signal therefrom;

digitizing the non-coherently layered in-phase signal and the non-coherently layered quadrature signal; and

decoding the digitized non-coherently layered in-phase signal and the non-coherently layered quadrature signal to produce ~~one or more discrete layer signals~~ the upper layer signal and the lower layer signal.

24. (ORIGINAL) The method of Claim 23, wherein the step of decoding is performed by a logic circuit.

25. (ORIGINAL) The method of Claim 23, wherein the step of decoding includes frequency acquisition on the layered quadrature signal.

26. (CURRENTLY AMENDED) The method of Claim 23, further comprising receiving and decoding ~~each of the one or more discrete layer signals to be displayed~~ the upper layer signal and the lower layer signal.

27. (CURRENTLY AMENDED) The method of Claim 23, wherein the step of decoding comprises matched filtering the non-coherently layered in-phase signal and the non-coherently layered quadrature signal.

28. (CURRENTLY AMENDED) The method of Claim 23, wherein the step of decoding comprises demodulating and decoding an upper layer signal from the non-coherently layered in-phase signal and the non-coherently layered quadrature signal to produce [[an]] the upper ~~one of the one or more discrete~~ layer signal[[s]].

29. (CURRENTLY AMENDED) The method of Claim 28, wherein the step of decoding comprises producing an ideal upper layer signal including an ideal in-phase upper layer signal and an ideal quadrature upper layer signal from the decoded upper layer signal and subtracting the ideal in-phase upper layer signal and the ideal quadrature upper layer signal from the non-coherently layered in-phase signal and the non-coherently layered quadrature signal, respectively, to produce a lower layer in-phase signal and a lower layer quadrature signal of [[a]] the lower ~~one of the one or more discrete~~ layer signal[[s]].

30. (CURRENTLY AMENDED) The method of Claim 29, wherein the step of decoding comprises demodulating and decoding the lower layer in-phase signal and the lower layer quadrature signal to produce the lower ~~one of the one or more discrete~~ layer signal[[s]].

31. (ORIGINAL) The method of Claim 29, wherein the step of decoding comprises match filtering the lower layer in-phase signal and the lower layer quadrature signal.

32. (ORIGINAL) The method of Claim 29, wherein the step of decoding comprises delaying the layered in-phase signal and the layered quadrature signal to synchronize the subtraction.

33. (CURRENTLY AMENDED) The method of Claim 32, wherein delaying comprises correlating the layered in-phase signal and the layered quadrature signal ~~are delayed by to the ideal in-phase upper layer signal and the ideal quadrature upper layer signal~~.

34. (ORIGINAL) The method of Claim 29, wherein producing the ideal upper layer signal comprises signal processing the ideal in-phase upper layer signal and the ideal quadrature upper layer signal.

35. (ORIGINAL) The method of Claim 34, wherein signal processing the ideal in-phase upper layer signal and the ideal quadrature upper layer signal comprises pulse shaping the ideal in-phase upper layer signal and the ideal quadrature upper layer signal.

36. (ORIGINAL) The method of Claim 34, wherein signal processing the ideal in-phase upper layer signal and the ideal quadrature upper layer signal comprises applying a signal map to the ideal in-phase upper layer signal and the ideal quadrature upper layer signal, the signal map accounting for transmission distortions of the layered signal.

37. (CURRENTLY AMENDED) The method of Claim 34, wherein signal processing the ideal in-phase upper layer signal and the ideal quadrature upper layer signal comprises amplitude and phase matching the ideal in-phase upper layer signal and the ideal quadrature upper layer signal with the non-coherently layered in-phase signal and the non-coherently layered quadrature signal, respectively.

38. (NEW) The apparatus of claim 1, wherein the upper layer signal is a legacy signal and the lower layer signal is a non-legacy signal.

39. (NEW) The processor of claim 16, wherein the upper layer signal is a legacy signal and the lower layer signal is a non-legacy signal.

40. (NEW) The method of claim 23, wherein the upper layer signal is a legacy signal and the lower layer signal is a non-legacy signal.

41. (NEW) In a system broadcasting a legacy signal having legacy data to a plurality of legacy receivers, a method of increasing data throughput of the system so as to transmit the legacy data to the legacy receivers while compatibly transmitting the legacy data and non-legacy data adding to or enhancing the legacy data to a plurality of non-legacy receivers, comprising:

transmitting a non-coherently layered modulation signal to the legacy receivers and the non-legacy receivers;

wherein the non-coherently layered modulation signal comprises a lower layer signal and an upper layer signal non-coherently layered with the lower layer; and

wherein the upper layer signal comprises the legacy data and the lower layer signal comprises the non-legacy data.

42. (NEW) The method of claim 41, wherein the lower layer signal and the upper layer signal are transmitted by different transmitters.

43. (NEW) The method of claim 41, Wherein the lower layer signal is transmitted by a legacy transmitter and the upper layer signal is asynchronously transmitted by a non-legacy transmitter.

44. (NEW) In a system broadcasting a legacy signal having legacy data to a plurality of legacy receivers, a method of increasing data throughput of the system so as to transmit the legacy data to the legacy transmitters while compatibly transmitting the legacy data and non-legacy data adding to or enhancing the legacy data to a plurality of non-legacy receivers, comprising the steps of:

receiving a non-coherently layered modulation signal comprising a lower layer having the first data non-coherently layered with an upper layer signal having the non-legacy second data, wherein the upper layer signal comprises the legacy data and the lower layer signal comprises the non-legacy data;

demodulating the upper layer signal from the non-coherently layered modulation signal and providing the demodulated upper layer signal having the legacy data to a first output;

remodulating the demodulated upper layer signal;

subtracting the remodulated ideal upper layer signal from the non-coherently layered modulation signal to produce the lower layer signal;

demodulating the lower layer signal and providing the demodulated lower layer signal having the non-legacy data to a second output.

45. (NEW) The method of claim 44, wherein the lower layer signal and the upper layer signal are transmitted by different transmitters.

46. (NEW) The method of claim 44, Wherein the lower layer signal is transmitted by a legacy transmitter and the upper layer signal is asynchronously transmitted by a non-legacy transmitter.